DESIGN FOR A FIRE-PROOF PUBLIC ABATTOIR.

PUBLIC attention being turned at this moment to the provision of abattoirs, we are led to give illustrations of a design for a fire-proof abattoir which was submitted by Mr. E. W. Gooch, in competition to the Islington Cattle Market Company,* and which, although not selected for reward, appears to have been generally commended. We give a block plan, with references; a transverse and longitudinal section, and the designer's own particulars.

The plan proposed is supposed to be large enough to kill and store all the meat that may be required for the supply of London, taking into consideration the quantity killed in the private slaughter-houses and the dead meat sent up from the country. The four large divisions with yards and lairs adjoining are for bullocks, two divisions for sheep, one for calves, and one for pigs, with a lair in each yard, fitted up with mangers, racks, water and other troughs complete. The lairs to be paved with two courses of tile flat paving in cement, with a fall into yard, and ventilated from the front with perforated iron panel-work built in the window openings. The yards to be paved with granite paving, with a fall for drainage to the centre. The store above the lairage is supported on the inside by iron columns.

In the slaughter-houses either sideways or across, bullocks may be killed, but for private individuals killing their own meat, they would be best fitted up in divisions, with a door into each from yard, allowing a space of about 12 feet 6 inches square each man to kill at cross corners: these are fitted up with double blood tanks, to allow of killing on each side of the posts that form the divisions upon any great emergency, but this would seldom be required. These divisions to be numbered. Hot and cold water to be laid on to each division, and a small crane with proper tackle fixed in each. The meat, when dressed, to be sent by a railway over head to the lifting-room, and taken away from the steam of the slaughter-house, immediately it is finished, to the store above.

There is a small four-wheel carriage connected with a bar in the centre, from which will drop a wrought-iron swivel brace bracket, with hook at end to turn right and left, to take the bullocks from any division from the crane to the railway. The carriage, with the bullock, to be pulled along by a twisted copper rope, so that the meat need not be handled at all; and, by using one of the new patent cranes, that weighs at the same time it lifts, the weight of each bullock, &c. could be ascertained at the same time, and at considerably less trouble. Each end of the slaughter-houses, with one of the hide or skin rooms, can be used for the offal. The blood-tanks to be made with small drain from bottom, and plug and chain similar to a wash-hand basin, to be used for cleaning out the same. Gutta percha stoppers to fit the surface channel, to turn the blood into the tank, to be provided for each tank. The windows to be formed with louvre boards, and the walls throughout rendered with Keene's cement, and trowelled to a smooth surface. Floors are paved with York stone, jointed in cement, with a proper fall to surface drains. The other slaughter-houses, for sheep, calves, and pigs, will require but little fitting-up different to the above description, with the exception of the railway, which will be suspended from the iron girders that support the floor above, and a blood-tank put in every division between the two iron girders, and no posts will be required as to slaughter-houses for bullocks.

The store-houses are carried over all the slaughter-houses and lairs below (with the exception of the lair next the market, which can be carried up if required). The floor is formed of three courses of tiles, bedded in cement, supported on small iron girders, resting on each wall, with small wrought-iron bars running from girder to girder, as shown in sections.

The floors are laid to a proper fall to the various gratings, to carry off the water to drains below. Each store is fitted up with a railway along the centre from end to end, supported from light girders, to convey the meat from any division required, which can be continued round the outside stores. The stores can be divided off from girder to girder, with light iron bars, leaving a 5-feet passage along the centre, enclosed in the front with iron gate, lock and key.

Hot and cold water to be laid on to each division, and to be fitted up with dresser, top rails, and hooks for meat, and such other conveniences as may be required. The windows to be filled in with perforated zinc, with inside louvre boards to shut out frost. The roofs are formed with tile arches, with ventilators filled in with perforated zinc, and shutters to keep out frost, running the whole length of roofs, as shown in sections. Two or three doors to be made in every wing, to allow the butchers to receive their meat into their carts in the yards below. The rotunda is the centre of communication from every wing, with a landing all round; also a small side staircase, leading to an upper gallery, with easy access to any of the roofs. The dome is turned four tiles in thickness. The walls tied in by iron rods, with a suspension rod from the centre of top, and a circular iron frame to receive top of dome. The upper part is a ventilator. A residence is provided for a resident superintendent or inspector, who is to have charge of the abattoir. There are also four offices, and if the officers are required to sleep on the premises it can easily be arranged. The cost would be from 15,000*l.* to 20,000*l.*

* The Islington Cattle Market Company have recently published a "Plan of the Islington Cattle Market with proposed Additions," showing that they can command an area for general purposes of 75 acres if required.

THE INTERNATIONAL EXHIBITION.

ON Wednesday, the 23rd, there was a general meeting of the Metropolitan Local Commissioners with the Royal Commissioners at Westminster, to consider how best to supply deficiencies in the returns made, when 150 gentlemen attended, representing a large amount of intelligence and knowledge. Amongst the matters wherein deficiencies at present exist may be mentioned door-springs, japanning, buhl work (what is Clerkenwell about?), iron, maps and charts, and ornamental papers. A large model of the building was exhibited, in which, as we fancy will be the case in execution, the extra height of the transept produces an unsatisfactory effect. ——Opportunities will be afforded for shewing pavements, parquetry works, fountains, ceilings, and other similar objects, in preparation for the Exhibition, as parts of the decorations of the building. The spaces, which may be filled with scagliola, cement, and other wall decorations, will be 14 feet high, with semi-circular heads, and 8 feet wide. Parties wishing to exhibit decorative railings may obtain the necessary information by applying to the Executive Committee.——Amongst the specimens from Ceylon will be a fine collection of Singhalese carvings.——The commissioners will supply steam-power to exhibitors gratuitously.—— The building is being proceeded with rapidly, and offers several points of construction, which shall have our attention in a short time.—— Messrs. Fox and Henderson have published a very large coloured lithograph of the building, the best yet issued. The shop-windows are now filled with views of this structure, of all sorts and sizes; the majority of which, by the way, have evidently been copied from the view we gave.

ENGINEERING AND ARCHITECTURAL WORKS IN IRELAND.

THE Sisters of Mercy (Limerick) are about erecting a more extensive building than the present one for the accommodation of orphans. ——The report of Mr. G. W. Hemans, engineer to the Midland Great Western Railway Company, states that the works on the extension line to Galway are progressing rapidly; from 8,000 to 9,000 men have been in constant employment during the summer. The cost of working the line is expected to be about 11,500*l.* A locomotive engine is at present working on the line at Athlone. The large bridges over the river Luck and the estuary at Lough Atalia are in a forward state of progress. The bridge over the river Shannon is also being erected: it consists of eight piers, 10 feet wide; in the centre is a bay 10 feet span, with bays on either side of 43 feet span; two larger bays of 165 feet in width, with segmental lattice-work, are at each side of the latter; and between *these* and the abutments are bays about 43 feet span.——The Drainage Commissioners of the Board of Public Works have for the last twelve months employed 300 or 400 men in erecting an embankment from the town of Youghal to the extensive wooden bridge crossing the Blackwater, in the execution of which work many obstacles had to be overcome in consequence of the volume of water within the embankment and the pressure of the sea from without. The embankment, 2,303 yards in length, encloses a triangular area of 250 acres, the land being at one side, and the causeway to the bridge at the other. It is 6 feet wide at the top, and on the outer side a retaining wall of heavy stonework is erected. After having partially yielded several times, the works are at length secure, and the water will be let off through a floodgate. The original estimate for this work was 8,811*l.* 5s. On the 31st of December last 9,432*l.* 3s. 1d. were expended, and the estimate for its completion was 3,690*l.* Mr. Patrick Larkin, C.E., is superintending the execution of the works. ——The drainage of the Glyde and Doo districts is rapidly progressing under the superintendence of Mr. Robert Manning, C.E.: about 1,000 hands are employed in the district.——The Commissioners of National Education have lately advertised for the erection of a district model school at Galway, according to plans by their architect. —— The front building of the workhouse at Outerard has been lately burnt.——The Poor-Law Commissioners are about building a new workhouse at Croom, co. Limerick, according to the plans prepared by their architect.——A lighthouse is in the course of construction at Kinsalehead, to supersede the present light on the old head. The new tower will be on a more prominent sea point than the present.

PASSAGE OF WATER THROUGH PIPES.

THE explanation of your correspondent, Mr. Ryde, places the question of the flow of water through pipes, &c., in a greater dilemma than ever.

Hawksley's formulæ, he must be aware, have been often condemned, by certain parties, as exhibiting something like one-third less results than their practice dictates, and yet, according to Mr. Ryde's explanation, the practical experiments of the Commissioners of Sewers serve rather to corroborate Hawksley's calculations, as well as those of Beardmore subsequently made, and which approximate very closely to those of Hawksley.

All that appears, then, to have been established by the expensive experiments of the Metropolitan Commissioners of Sewers is that a main pipe, with five junctions at intervals, discharges a greater quantity of water than without them, a fact very well known before to hydraulic engineers, for this simple reason, that by the increase of hydraulic pressure you increase the flow of water in certain ratios.

That Mr. Ryde's reasoning and explanation differ from several authorities will appear evident by a few extracts from the Report of the Board of Health on Metropolitan Water Supply. At page 173, Mr. Medhurst states, as the results of some experiments he had been directed to make, that a 6-inch pipe, with an inclination of 1 in 100, will discharge 63½ cubic feet of water per minute (*not a word about junctions*), while the result, according to Hawksley's formulæ, is only 40¼ cubic feet per minute (Beardmore's, 41·6). Again, he states a 4-inch pipe gave 23 cubic feet, the formulæ only 14·7 cubic feet (Beardmore's, 15). Again, he states a 3-inch pipe gave 11¼ cubic feet, the formulæ 7·0 cubic feet (Beardmore's, 7·3).

In the next page he states that a 6-inch pipe, with a fall of 1 in 800, gives, by Hawksley's Tables, 14·2 cubic feet per minute (Beardmore's, 14·3), while his own experiments produced the result of 47·2 cubic feet per minute.

Phillips, in his evidence before the Metropolitan Sanitary Commissioners, 1847 (page 57 of report), states that Hawksley's formulæ for town drainage give sizes from three-and-a-half to five times greater than he found necessary in practice. In this opinion he was supported by the evidence of Austin, Roe, Ranger, and others.

I am quite aware that all that is known upon the subject of the discharge of fluids through pipes, &c., are the deductions drawn from the

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